# AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

| 1. CONTRACT ID CODE | PAGE | OF | PAGES |
|---|---|---|---|
| | 1 | | 3 |

| 2. AMENDMENT/MODIFICATION NO. | 3. EFFECTIVE DATE | 4. REQUISITION/PURCHASE REQ. NO. | 5. PROJECT NO. *(If applicable)* |
|---|---|---|---|
| 0002 | 4 DEC 2001 | | |

| 6. ISSUED BY | CODE | 7. ADMINISTERED BY *(If other than Item 6)* | CODE |
|---|---|---|---|
| US ARMY ENGINEER DISTRICT, FORT WORTH<br>ATTN: CESWF-CT (RM 2A19)<br>PO BOX 17300<br>FORT WORTH, TX 76102-0300 | | | |

| 8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP Code)* | (X) | 9A. AMENDMENT OF SOLICIATION NO. |
|---|---|---|
| | ☒ | DACA63-02-B-0001 |
| | | 9B. DATED *(SEE ITEM 11)*<br>16 NOVEMBER 2001 |
| | ☐ | 10A. MODIFICATION OF CONTRACT/ORDER NO. |
| | | 10B. DATED *(SEE ITEM 11)* |
| CODE / FACILITY CODE | | |

## 11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☒ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☒ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a)By completing items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment your desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA *(If required)*

## 13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

| CHECK ONE | |
|---|---|
| | A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: *(Specify authority)* THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A. |
| | B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES *(such as changes in paying office, appropriation date, etc.)* SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b). |
| | C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF: |
| | D. OTHER *(Specify type of modification and authority)* |

**E. IMPORTANT:** Contractor ☐ is not, ☐ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (*Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*

The Solicitation for ENLISTED BARRACKS COMPLEX II, FORT HOOD, TEXAS, is amended as follows:

See Continuation Sheet.

NOTE: The Bid Opening date and time remain "18 December 2001, at 2 p.m., local time," as previously announced.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

| 15A. NAME AND TITLE OF SIGNER *(Type or print)* | | 16A. NAME AND TITLE OF CONTRACTING OFFICER *(Type or print)* | |
|---|---|---|---|
| 15B. CONTRACTOR/OFFEROR<br>*(Signature of person authorized to sign)* | 15C. DATE SIGNED | 16B. UNITED STATES OF AMERICA<br>*(Signature of Contracting Officer)* | 16C. DATE SIGNED |

Item 14. Continued.

**CHANGES TO BIDDING SCHEDULE**

1. Replace the Bidding Schedule, pages 00010-3 through 00010-7, with the accompanying new Bidding Schedule bearing the notation "ACCOMPANYING AMENDMENT NO. 0002 TO SOLICITATION NO. DACA63-02-B-0001."

**CHANGES TO THE SPECIFICATIONS**

2. New Sections - Add the following accompanying new section, bearing the notation "ACCOMPANYING AMENDMENT NO. 0002 TO SOLICITATION NO. DACA63-02-B-0001:"

SECTION 08330 OVERHEAD COILING DOORS

3. Replacement Sections - Replace the following sections with the accompanying new sections of the same number and title, bearing the notation "ACCOMPANYING AMENDMENT NO. 0002 TO SOLICITATION NO. DACA63-02-B-0001:"

SECTION 05500 MISCELLANEOUS METAL
SECTION 06100 ROUGH CARPENTRY
SECTION 09510 ACOUSTICAL CEILINGS
SECTION 10442 INTERIOR SIGNAGE

**CHANGES TO THE DRAWINGS**

4. Write-in changes to the drawings – The following drawings shall be revised as follows:

AA03 Section Cut Reference 4/ AA02,AA03/AA10 is correctly shown cutting through the north porch area but at bottom of plan where reference symbol is shown the cut needs to move to left of sheet next to symbol 2/AA02,AA02/AA10 as graphically depicted on 4/AA10.

AA14 Change detail reference symbol 5/AA14/AA20 on Enlarged Plan 1/AA02/AA14 to read 11/AA14/AA14. This is a stainless steel shelf in the Mail Room. Change the 2400mm dimension to 4000mm.

AA14 Change shelving reference from 5/AA20 to 7/AA14 on Detail 10/AA14/AA14.

AD02 There are two Access Hatches in MECHANICAL D121 room. The one located adjacent to the STORAGE D106 shall be noted ROOF ACCESS HATCH. The one located adjacent to BEVERAGE D131 shall be noted CRAWL SPACE ACCESS HATCH.

AD15 The 300mm Shelf on Detail 16 should be changed to 200mm.

AD15 Delete the phrase “SOLID CORE WOOD DOOR” at Door Type “B”.

5. Replacement Drawings.- Replace the drawings listed below with the attached new drawings of the same number, bearing the notation "AM #0002":

sa03.cal SA03 FOUNDATION PLAN
sa04.cal SA04 FOUNDATION SECTIONS 1
sa06.cal SA06 FOUNDATION SECTIONS 3 AND GRADE BEAM SCHEDULE
sa06a.cal SA06A FOUNDATION SECTIONS 4
sa07.cal SA07 SECOND FLOOR FRAMING PLAN
sa09.cal SA09 SECOND FLOOR AND ROOF FRAMING SECTIONS 1

sa10.cal SA10 SECOND FLOOR AND ROOF FRAMING SECTIONS 2
sa11.cal SA11 SECOND FLOOR AND ROOF FRAMING SECTIONS 3
sa12.cal SA12 SECOND FLOOR AND ROOF FRAMING SECTIONS 4
ib13.cal IB13 SIGNAGE SCHEDULE
ac05.cal AC05 REFLECTED CEILING PLAN
ac12.cal AC12 WALL SECTIONS A & B & C
ac13.cal AC13 WALL SECTION D & E & F
ac21.cal AC21 ROOF DETAILS
sc10.cal SC10 PARTIAL ROOF PLAN -1
sc11.cal SC11 PARTIAL ROOF PLAN -2
ad06.cal AD06 PAVER PLAN
se01.cal SE01 STRUCTURAL NOTES & MISCELLANEOUS DETAILS
se02.cal SE02 FOUNDATION PLAN & SECTIONS
se03.cal SE03 ROOF FRAMING PLAN & SECTIONS
se04.cal SE04 CHILLED WATER STORAGE TANK

END OF AMENDMENT

Solicitation No. DACA63-02-B-0001

BIDDING SCHEDULE
(To be attached to SF1442)

| Item No. | Description | | Estimated Quantity | Unit | Unit Price | Estimated Amount |
|---|---|---|---|---|---|---|
| BASE BID: All work required by the plans and specifications for the construction of the Enlisted Barracks Complex excluding all Options. | | | | | | |
| 0001 | Barracks Buildings; complete (Including all utilities to the 1524mm (5-Ft) line exclusive of all work listed separately) | | Job | Sum | *** | $_____ |
| 0002 | Soldier Community Building complete (Including all utilities to the 1524mm (5-Ft) line exclusive of all work listed separately) | | Job | Sum | *** | $_____ |
| 0003 (am2) | **Five** Company Operations Buildings, complete (Including all utilities to the 1524mm (5-Ft) line exclusive of all work listed separately) | | Job | Sum | *** | $_____ |
| 0004 | Central Plant, complete Including all utilities to the 1524mm (5-Ft) line exclusive of all work listed separately) | | Job | Sum | *** | $_____ |
| 0005 | Drilled Piers | | | | | |
| 0005AA | 460mm (18-In) Drilled Piers | (am2) | **2,826** | M | $_____ | $_____ |
| 0005AB | 610mm (24-In) Drilled Piers | (am2) | **2,016** | M | $_____ | $_____ |
| 0005AC | 762mm (30-In) Drilled Piers | | 245 | M | $_____ | $_____ |
| 0005AD | 915mm (36-In) Drilled Piers | (am2) | **1,410** | M | $_____ | $_____ |
| 0005AE | 1067mm (42-In) Drilled Piers | | 73 | M | $_____ | $_____ |

BIDDING SCHEDULE (cont)

| Item No. | Description | Estimated Quantity | Unit | Unit Price | Estimated Amount |
|---|---|---|---|---|---|
| 0006 | Hazardous Material Abatement | | | | |
| 0006AA | 150mm Asbestos Cement Pipe | 12 | M | $_____ | $_____ |
| 0006AB | 75mm Asbestos Cement Pipe | 75 | M | $_____ | $_____ |
| 0006AC | 150mm Pipe Joint Containing Lead | 8 | EA | $_____ | $_____ |
| 0006AD | 75 Pipe Joint Containing Lead | 50 | EA | $_____ | $_____ |
| 0007 | All Exterior Work outside the building's 1524mm (5-Ft) line (Including of all utilities, earthwork, paving sidewalk, curb and gutter, demolition, turfing, pavilions and all other work not listed separately | Job | Sum | *** | $_____ |
| 0008 | Mobilization & Demobilization | Job | Sum | *** | $_____ |
| 0009 | Final Record Drawings | Job | Sum | *** | $ 100,000.00 |
| | | | TOTAL BASE BID | | $_____ |

OPTION NO. 1: All work required by the plans and specifications for the construction of the Dining Facility.

| | | | | | |
|---|---|---|---|---|---|
| 0010 | Dining Facility, complete (Including all utilities to the 1524mm (5-Ft) line exclusive of all work listed separately) | Job | Sum | *** | $_____ |
| 0011 | Drilled Piers | | | | |
| 0011AA | 460mm (18-In) Drilled Pier | 237 | M | $_____ | $_____ |
| 0011AB | 610mm (24-In) Drilled Pier | 553 | M | $_____ | $_____ |
| 0011AC | 760mm (30-In) Drilled Pier | 694 | M | $_____ | $_____ |

BIDDING SCHEDULE (cont)

| Item No. | Description | Estimated Quantity | Unit | Unit Price | Estimated Amount |
|---|---|---|---|---|---|
| 0012 | Hazardous Material Abatement | | | | |
| 0012AA | 200mm Asbestos Cement Pipe | 3 | M | $_____ | $_____ |
| 0012AB | 75mm Asbestos Cement Pipe | 2 | M | $_____ | $_____ |
| 0013 | All Exterior Work outside the building's 1524mm (5-Ft) line (Including of all utilities, earthwork, paving sidewalk, curb and gutter, demolition, turfing and all other work not listed separately | Job | Sum | *** | $_____ |

TOTAL OPTION NO. 1 $_____

OPTION NO. 2:

**All work designated as Option No. 2 is included in the Base Bid (am2).**

BIDDING SCHEDULE (cont)

| Item No. | Description | Estimated Quantity | Unit | Unit Price | Estimated Amount |
|---|---|---|---|---|---|
| | OPTION NO. 3: All work required by the plans and specifications for the construction of the Chilled Water Storage Tank. | | | | |
| 0017 | Water Storage Tank (Complete) | Job | Sum | *** | $_____ |
| | OPTION NO. 4: All work required by the plans and specifications for the construction of additional POV parking. | | | | |
| 0018 | POV Parking | Job | Sum | *** | $_____ |

**TOTAL BASE BID PUS OPTIONS 1, 3 and 4 $_____**

NOTES:

1. ARITHMETIC DISCREPANCIES: (1989 JUL)

   (a) For the purpose of initial evaluation of bids, the following will be utilized in resolving arithmetic discrepancies found on the face of the bidding schedule as submitted by bidders:

   (1)Obviously misplaced decimal points will be corrected;

   (2)In case of discrepancy between unit price and extended price, the unit price will govern;

   (3)Apparent errors in extension of unit prices will be corrected; and

   (4)Apparent errors in addition of lump-sum and extended prices will be corrected.

   (b) For the purposes of bid evaluation, the Government will proceed on the assumption that the bidder intends his bid to be evaluated on the basis of the unit prices, extensions, and totals arrived at by resolution of arithmetic discrepancies as provided above and the bid will be so reflected on the abstract of bids. (EFARS 14.406-2)

2. If a modification to a bid based on unit prices is submitted, which provides for a lump sum adjustment to the total estimated cost, the application of the lump sum adjustment to each unit price in the bid schedule must be stated. If it is not stated, the bidder agrees that the lump sum adjustment shall be applied on a pro rata basis to every unit price in the bid schedule.

3. Bidders must bid on all items.

BIDDING SCHEDULE (cont)

NOTES: (cont)

4. Costs attributable to Division 01 - General Requirements are assumed to be prorated among bid items listed.

5. Responders are advised that this requirement may be delayed, canceled or revised at any time during the solicitation, selection, evaluation, negotiation and/or final award process based on decisions related to DOD changes in force structure and disposition of the Armed Services.

6. For the purpose of this solicitation, the word "item" shall be considered to mean "schedule" as used in Provision 52,214-0019, CONTRACT AWARD--SEALED BIDDING--CONSTRUCTION, in Section 00100 INSTRUCTIONS, CONDITIONS, AND NOTICES TO BIDDERS, excluding additives, deductives or options

7 EVALUATION OF OPTIONS (JUL 1990) (FAR 52.217-5)

Except when it is determined in accordance with FAR 17.206(b) not to be in the Government's best interests, the Government will evaluate offers for award purposes by adding the total price for all options to the total price for the basic requirement. Evaluation of options will not obligate the Government to exercise the option(s).

8 OPTION FOR INCREASED QUANTITY – SEPARATELY PRICED LINE ITEM (MAR 1998) (FAR 52.217-7)

The Government may require the completion of the numbered line item, identified in he Bidding Schedule as an option item, in the quantity and at the price stated in the Bidding Schedule. The Contracting Officer may exercise the option by written notice to the Contractor within the period specified in the Bidding Schedule. Completion of added items shall continue at the same schedule as the Base Bid unless otherwise noted in the SPECIAL CONTRACT REQUIREMENTS, paragraph 1 entitled COMMENCEMENT, PROSECUTION AND COMPLETION OF WORK.

9. The Government reserves the right to exercise the option(s) either singularly or in any combination for up to 90 calendar days after award of the Base Bid without an increase in the Offeror's Bid Price.

10. ABBREVIATIONS

| | |
|---|---|
| mm | millimeter |
| M | meter |
| In | inch |
| Ft | foot |

END OF BIDDING SCHEDULE

SECTION 05500

MISCELLANEOUS METAL
**07/97**
**Amendment 0002**

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ALUMINUM ASSOCIATION (AA)

| | |
|---|---|
| AA DAF-45 | (1997) Designation System for Aluminum Finishes |

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

| | |
|---|---|
| ANSI A14.3 | (1992) Ladders - Fixed - Safety Requirements |
| ANSI MH28.1 | (1982) Design, Testing, Utilization, and Application of Industrial Grade Steel Shelving |

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

| | |
|---|---|
| ASTM A 36/A 36M | (1997ael) Carbon Structural Steel |
| ASTM A 53 | (1999b) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless |
| ASTM A 123/A 123M | (1997ael) Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products |
| ASTM A 283/A 283M | (1998) Low and Intermediate Tensile Strength Carbon Steel Plates |
| ASTM A 467/A 467M | (1998) Machine and Coil Chain |
| ASTM A 475 | (1998) |

Zinc-Coated Steel Wire Strand

| | |
|---|---|
| ASTM A 500 | (1999) Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes |
| ASTM A 653/A 653M | (1999) Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process |
| ASTM A 924/A 924M | (1999) General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process |
| ASTM B 26/B 26M | (1998) Aluminum-Alloy Sand Castings |
| ASTM B 221 | (1996) Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes |
| ASTM B 221M | (1996) Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric) |
| ASTM B 429 | (1995) Aluminum-Alloy Extruded Structural Pipe and Tube |
| ASTM D 2047 | (1993) Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine |
| ASTM F 1267 | (1997) Metal, Expanded, Steel |

AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)

| | |
|---|---|
| ASCE 7 | (1995) Minimum Design Loads for Buildings and Other Structures |

AMERICAN WELDING SOCIETY (AWS)

| | |
|---|---|
| AWS D1.1 | (1998) Structural Welding Code - Steel |

COMMERCIAL ITEM DESCRIPTIONS (CID)

| | |
|---|---|
| CID A-A-344 | (Rev B) Lacquer, Clear Gloss, Exterior, Interior |

NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS (NAAMM)

| | |
|---|---|
| NAAMM MBG 531 | (1994) Metal Bar Grating Manual |
| NAAMM MBG 532 | (1994) Heavy Duty Metal Bar Grating Manual |

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

| | |
|---|---|
| NFPA 211 | (1996; Errata 96-1) Chimneys, Fireplaces, Vents and Solid Fuel-Burning Appliances |

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When

used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Miscellaneous Metal Items

Detail drawings indicating material thickness, type, grade, and class; dimensions; and construction details. Drawings shall include catalog cuts, erection details, manufacturer's descriptive data and installation instructions, and templates. Detail drawings for the following items:

a. Access doors and frames
b. Vents
c. Cleanout doors
d. Corner guards and shields
e. Door guards
f. Pipe guards
g. Expansion joint covers
h. Floor gratings and frames
i. Floor plates
j. Foundation vents
k. Handrails/Guardrails
l. Partitions,diamond-mesh type
m. Roof scuttles
n. Safety nosing
o. Shelving
p. Steel stairs
q. Trench covers, frames, and liners
r. Ladders
t. Miscellaneous
u. Wall Louvers and Screens
v. Suspended Ceiling System
w. Kitchen Equipment- Custom fabricated
x. Vent Wells
y. Closet Rod and Shelf Brackets
**z. Roll-Up Floor Mats (am#2)**

SD-04 Samples

Miscellaneous Metal Items; G.

Samples of the following items one of each type: Refer to list above. Samples shall be full size, taken from manufacturer's stock, and shall be complete as required for installation in the structure. Samples may be installed in the work, provided each sample is clearly identified and its location recorded.

1.3 GENERAL REQUIREMENTS

The Contractor shall verify all measurements and shall take all field measurements necessary before fabrication. Welding to or on structural steel shall be in accordance with AWS D1.1. Items specified to be galvanized, when practicable and not indicated otherwise, shall be hot-dip galvanized after fabrication. Galvanizing shall be in accordance with ASTM A 123/A 123M, ASTM A 653/A 653M, or ASTM A 924/A 924M, as applicable. Exposed fastenings shall be compatible materials, shall generally match in color and finish, and shall harmonize with the material to which fastenings are applied. Materials and parts necessary to complete each item, even though such work is not definitely shown or specified, shall be included. Poor matching of holes for fasteners shall be cause for rejection.

Fastenings shall be concealed where practicable. Thickness of metal and details of assembly and supports shall provide strength and stiffness. Joints exposed to the weather shall be formed to exclude water.

1.4 DISSIMILAR MATERIALS

Where dissimilar metals are in contact, or where aluminum is in contact with concrete, mortar, masonry, wet or pressure-treated wood, or absorptive materials subject to wetting, the surfaces shall be protected with a coat of bituminous paint or asphalt varnish.

1.5 WORKMANSHIP

Miscellaneous metalwork shall be well formed to shape and size, with sharp lines and angles and true curves. Drilling and punching shall produce clean true lines and surfaces. Welding shall be continuous along the entire area of contact except where tack welding is permitted. Exposed connections of work in place shall not be tack welded. Exposed welds shall be ground smooth. Exposed surfaces of work in place shall have a smooth finish, and unless otherwise approved, exposed riveting shall be flush. Where tight fits are required, joints shall be milled. Corner joints shall be coped or mitered, well formed, and in true alignment. Work shall be accurately set to established lines and elevations and securely fastened in place. Installation shall be in accordance with manufacturer's installation instructions and approved drawings, cuts, and details.

1.6 ANCHORAGE

Anchorage shall be provided where necessary for fastening miscellaneous metal items securely in place. Anchorage not otherwise specified or indicated shall include slotted inserts made to engage with the anchors, expansion shields, and power-driven fasteners when approved for concrete; toggle bolts and through bolts for masonry; machine and carriage bolts for steel; and lag bolts and screws for wood.

1.7 ALUMINUM FINISHES

Unless otherwise specified, aluminum items shall have anodized finish. The thickness of the coating shall be not less than that specified for protective and decorative type finishes for items used in interior locations or architectural Class I type finish for items used in exterior locations in AA DAF-45. Items to be anodized shall receive a polished satin finish. Aluminum surfaces to be in contact with plaster or concrete during construction shall be protected with a field coat conforming to CID A-A-344.

1.8 SHOP PAINTING

Surfaces of ferrous metal except galvanized surfaces, shall be cleaned and shop coated with the manufacturer's standard protective coating unless otherwise specified. Surfaces of items to be embedded in concrete shall not be painted. Items to be finish painted shall be prepared according to manufacturer's recommendations or as specified.

PART 2 PRODUCTS

2.1 ACCESS DOORS AND PANELS

Doors and panels shall be flush type unless otherwise indicated. Frames for access doors shall be fabricated of not lighter than 1.52 mm (16 gauge) steel with welded joints and finished with anchorage for securing into construction. Access doors shall be a minimum of 350 by 500 mm and of not lighter than 1.9 mm (14 gauge) steel, with stiffened edges, complete with

attachments. Access doors shall be hinged to frame and provided with a flush face, screw driver operated latch. Exposed metal surfaces shall have a shop applied prime coat.

2.2 VENTS

Vents shall be designed and constructed in accordance with NFPA 211.Vents shall be designed and constructed to withstand a wind pressure of 1.4KPa in accordance with ASCE 7. Vents shall be constructed of black-steel plates not less than 5 mm thick conforming to ASTM A 36/A 36M. Seams and joints shall be welded, except that an angle flange shall be provided for connection to the boiler, other equipment, and vent support.

2.3 CLEANOUT DOORS

Cleanout doors shall be galvanized, shall be provided with frames, and unless otherwise indicated, shall be sized to match flues. The frames shall have a continuous flange and anchors for securing into masonry. The doors shall be smokeproof, hinged, and shall have fastening devices to hold the door closed.

2.4 DOOR GUARDS

Door guards shall be constructed of woven steel wire or expanded metal framed with structural steel shapes. Expanded metal guards shall be of 38 mm No. 10 mesh, welded to 25 by 25 by 3 mm angle frame. Woven-wire panel shall be of 10 gauge, 38 mm mesh secured through weaving to 25 mm channel frame or around a 10 m round bar frame. Corners of frames shall be mitered and welded. Guards shall be sized as indicated.

2.5 PIPE GUARDS

Pipe guards shall be heavy duty steel pipe conforming to ASTM A 53, Type E or S, weight STD, black finish.

2.6 EXPANSION JOINT COVERS

Expansion joint covers shall be constructed of extruded aluminum with anodized satin finish for walls and ceilings and with standard mill finish for floor covers and exterior covers. Plates, backup angles, expansion filler strip and anchors shall be designed as indicated. Expansion joint system shall provide a one hour fire rating.

2.7 FLOOR GRATINGS AND FRAMES

Unless otherwise specified in Specification Section 11400 FOOD SERVICE EQUIPMENT, Steel grating shall be designed in accordance with NAAMM MBG 531 to meet the indicated load requirements. Edges shall be banded with bars 6 mm less in height than bearing bars for grating sizes above 19 mm. Banding bars shall be flush with the top of bearing grating. Frames shall be of welded steel construction finished to match the grating. Floor gratings and frames shall be galvanized after fabrication.

2.8 FLOOR PLATES

Floor plates shall be 6 mm thick, raised thread steel.galvanized. slip-resistant, carbon steel conforming to ASTM A 283/A 283M having a minimum static coefficient of friction of 0.50 when tested in accordance with ASTM D 2047. Wearing surface shall be aluminum oxide or silicon carbide.

2.9 FOUNDATION VENTS

Foundation vents noted as crawl space vents (C.V.) in the drawings, shall be the same size as the concrete opening, and shall be of extruded aluminum with integral water stop and sliding interior closer or damper operable from the outside. Insect screen shall be provided at the back of the vent. Louvered opening shall have top and bottom drip lips, and the net ventilating area with closer or damper open shall be at least 35 percent of the gross wall opening. The frames shall have a structural strength adequate to permit use in concrete foundation walls without a lintel.

## 2.10 HANDRAILS

Handrails shall be designed to resist a concentrated load of 890 N (200 pounds) in any direction at any point of the top of the rail or 292 Newtons per meter (20 pounds per foot) applied horizontally to top of the rail, whichever is more severe.

### 2.10.1 Steel Handrails/Guardrails

Steel handrails and guardrails, including inserts in concrete, shall be steel pipe conforming to ASTM A 53 and structural tubing conforming to ASTM A 500, Grade A or B of equivalent strength as detailed in drawings. Steel railings shall be 50 mm nominal size. Railings shall be hot-dip galvanized and shop painted. Except stainless steel shall be provided at serving lines as shown in drawings.

a. Joint posts, rail, and corners shall be fabricated by one of the following methods:

   (1) Flush type rail fittings of commercial standard, welded and ground smooth with railing splice locks secured with 10 mm hexagonal recessed-head setscrews.

   (2) Mitered and welded joints by fitting post to top rail and intermediate rail to post, mitering corners, groove welding joints, and grinding smooth. Railing splices shall be butted and reinforced by a tight fitting interior sleeve not less than 150 mm long.

b. Removable sections, toe-boards, and brackets shall be provided as indicated.

## 2.11 LADDERS

Ladders shall be galvanized steel or aluminum, fixed rail type in accordance with ANSI A14.3.

## 2.12 MISCELLANEOUS

Miscellaneous plates and shapes for items that do not form a part of the structural steel framework, such as lintels, sill angles, miscellaneous mountings, and frames, shall be provided to complete the work.

## 2.13 PARTITIONS, DIAMOND MESH TYPE

Partitions shall be constructed of metal fabric attached to structural steel framing members. Fabric shall be 10 gauge steel wires woven into 38 mm diamond mesh with wire secured through weaving channels. Framing members shall be channels 38 by 3 mm minimum size. Channel frames shall be mortised and tenoned at intersections. Steel frames, posts, and intermediate members shall be of the sizes and shapes indicated. Cast-iron floor shoes and caps shall have setscrew adjustment. Doors and grilles

shall be provided as indicated, complete with hardware and accessories including sliding mechanisms, locks, guard plates, sill shelves and brackets, and fixed pin butts. Doors and grilles shall have cover plates as indicated. Dutch doors shall have a lock for each leaf. Reference Specification Section 09000 BUILDING COLOR AND FINISH SCHEDULE for acceptable manufacturers. A continuous rubber bumper shall be provided at bottom of grille frame. Locks shall be bronze, cylinder, mortise type. Keying shall be coordinated with Section 08700 BUILDERS' HARDWARE. Ferrous metal portions of partitions and accessories shall be galvanized.

2.14 ROOF SCUTTLES

Roof scuttles shall be of galvanized steel not less than 2.0 mm (14 gauge), with 75 mm beaded flange welded and ground at corners. Scuttle shall be sized to provide minimum clear opening of 940 by 760 mm. Cover and curb shall be insulated with 25 mm thick rigid insulation covered and protected by galvanized steel liner not less than 0.55 mm (26 gauge). The curb shall be equipped with an integral metal cap flashing of the same gauge and metal as the curb, full welded and ground at corners for weathertightness. Scuttle shall be completely assembled with heavy hinges, compression spring operators enclosed in telescopic tubes, positive snap latch with turn handles on inside and outside and neoprene draft seal. Fasteners shall be provided for padlocking on the inside. The cover shall be equipped with an automatic hold-open arm complete with handle to permit one hand release.

2.15 SAFETY NOSING

Safety nosings shall be of cast aluminum with cross-hatched, abrasive surface. Nosing shall be 75 mm wide and terminating at not more than 150 mm from the ends of treads, except nosing for metal pan cement-filled treads shall extend the full length of the tread. Safety nosings shall be provided with anchors not less than 19 mm long. Integrally cast mushroom anchors are not acceptable.

2.16 SHELVING

Unless otherwise specified in Specification section 11400 FOOD SERVICE EQUIPMENT shelving shall conform to ANSI MH28.1 and shall be bolted and capable of resisting a uniform load of 110 kg per meter. Minimum dimensions and number of shelves shall be as indicated.

2.17 STEEL STAIRS

Steel stairs shall be complete with structural or formed channel stringers, metal pan cement-filled treads, landings, columns, handrails, and necessary bolts and other fastenings as indicated. Structural steel shall conform to ASTM A 36/A 36M. Stairs and accessories shall be galvanized. Risers on stairs with metal pan treads shall be deformed to form a sanitary cove to retain the tread concrete. Integral nosings shall have braces extended into the concrete fill. Gratings for treads and landings shall conform to NAAMM MBG 531. Grating treads shall have slip-resistant nosings.

2.18 TRENCH COVERS, FRAMES, AND LINERS

Trench covers shall be designed to meet the indicated load requirements. Trench frames and anchors shall be all welded steel construction designed to match cover. Covers shall be secured to frame, and shall be cast-iron grating. Grating opening widths shall not exceed 25 mm. Trench liners shall be cast iron with integral frame for cover. Reference Specification section 11400 FOOD SERVICE EQUIPMENT for interior work in the "Dining Facility".

2.19 VENT WELLS

Vent wells shall be not lighter than 1.5 mm (16 gauge), corrugated sheet steel, hot-dip galvanized after fabrication. Top edge of walls shall have a 19 mm bead or rolled top. Window wells shall be semicircular or semielliptical in form and shall overlap the vent by at least 75 mm on each side. Removable cover, hot-dip galvanized after fabrication, consisting of steel bar grate with bars spaced at not more than 50 mm centers and welded to 25 by 6 mm frame shall be designed to fit into and rest on top edge of vent well.

2.20 Closet Rod and Shelf Brackets

Closet rod and shelf brackets shall be Heavy-Duty Shelf and Rod Support, Item No. FSR 123 as manufactured by CAL-ROYAL PRODUCTS, INC. (800) 222-3316 or approved equal.

**2.21 ROLL-UP FLOOR MATS**

**Roll-up floor mats shall be of aluminum construction with carpet surface. Roll-up mats shall be sized as shown in the drawings and for use in level surface areas. Manufacturer's color samples shall be submitted to COE District Interior Designer for selection. (am#2)**

PART 3 EXECUTION

3.1 GENERAL INSTALLATION REQUIREMENTS

All items shall be installed at the locations shown and according to the manufacturer's recommendations. Items listed below require additional procedures as specified.

3.2 REMOVABLE ACCESS PANELS

A removable access panel not less than 300 by 300 mm shall be installed directly below each valve, flow indicator, damper, or air splitter that is located above the ceiling, other than an acoustical ceiling, and that would otherwise not be accessible.

3.3 INSTALLATION OF VENTS

Vents shall be installed in accordance with NFPA 211.

3.4 DOOR GUARD FRAME

Door guard frame shall be mounted over the glazed opening using 6 mm lag bolts on the interior of wood doors or tamperproof through bolts on the interior of metal doors.

3.5 INSTALLATION OF PIPE GUARDS

Pipe guards shall be set vertically in concrete piers. Piers shall be constructed of, and the hollow cores of the pipe filled with, concrete specified in SECTION 03300 CAST-IN-PLACE STRUCTURAL CONCRETE, having a compressive strength of 21 MPa.

3.6 ATTACHMENT OF HANDRAILS/GUARRAILS

Toeboards and brackets shall be installed where indicated. Splices, where required, shall be made at expansion joints. Removable sections shall be installed as indicated.

3.6.1 Installation of Steel Handrails/Guardrails

Installation shall be base plates bolted to stringers or structural steel framework. Rail ends shall be secured by steel pipe flanges anchored by expansion shields and bolts to adjacent masonry.

3.7 PARTITION POSTS AND OPENINGS

Posts shall be set in shoes bolted to the floor and in caps tap-screwed to clip angles in overhead construction, as indicated. Openings shall be formed using channels similar to the partition frames at ducts, pipes, and other obstructions.

3.8 INSTALLATION OF SAFETY NOSINGS

Nosing shall be completely embedded in concrete before the initial set of the concrete occurs and shall finish flush with the top of the concrete surface.

3.9 TRENCH FRAMES AND COVERS

Trench frames and covers shall finish flush with the floor.

3.10 INSTALLATION OF VENT WELLS

Vent wells shall be placed as shown with the walls securely anchored to foundation surface. The area within the well shall be excavated to the bottom of the well and covered with a 100 mm thick layer of coarse gravel or crushed rock.

3.11 Custom Fabricated Kitchen Equipment

Contractor shall verify field measurements prior to fabrication by manufacturer. Refer to Specification Section 11400 FOOD SERVICE EQUIPMENT.

3.12 Closet Rod and Shelf Brackets

Brackets shall be spaced and installed per manufacturer's instructions.

**3.13 ROLL-UP FLOOR MATS**

**Contractor shall verify field measurements prior to releasing materials for fabrication by the manufacturer. A mat frame shall be used to ensure recess accuracy in size, shape, and depth. Frames shall be assembled onsite and installed so that upper edge will be level with finished floor surface. A cement base shall be screeded inside the mat recess frame area using the edge provided by the frame as a guide. The frame shall be anchored into the cement with anchor pins a minimum of 610 mm on centers. (am#2)**

-- End of Section --

SECTION 06100

ROUGH CARPENTRY
**09/96**
**Amendment 0002**

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN FOREST & PAPER ASSOCIATION (AF&PA)

| | |
|---|---|
| AF&PA T01 | (1991; Supple 1993; Addenda Apr 1997; Supple T02) National Design Specification for Wood Construction |
| AF&PA T11 | (1988) Manual for Wood Frame Construction |

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

| | |
|---|---|
| ASTM A 307 | (1997) Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength |
| ASTM C 79/C 79M | (1997) Treated Core and Nontreated Core Gypsum Sheathing Board |
| ASTM A 116 | (1988) Zinc-Coated (Galvanized) Steel Woven Wire Fence Fabric |
| ASTM C 518 | (1998) Steady-State Heat Flux Measurements and Thermal Transmission Properties By Means of the Heat Flow Meter Apparatus |
| ASTM C 553 | (1992) Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications |
| ASTM C 578 | (1995) Rigid, Cellular Polystyrene Thermal Insulation |
| ASTM C 591 | (1994) Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation |
| ASTM C 612 | (1993) Mineral Fiber Block and Board Thermal Insulation |
| ASTM C 665 | (1998) Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing |
| ASTM C 1136 | (1995) Flexible, Low Permeance Vapor Retarders for Thermal Insulation |
| ASTM C 1289 | (1998) Faced Rigid Cellular |

| | |
|---|---|
| | Polyisocyanurate Thermal Insulation Board |
| ASTM E 96 | (1995) Water Vapor Transmission of Materials |
| ASTM E 154 | (1988; R 1999) Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover |
| ASTM F 547 | (1977; R 1995) Definitions of Terms Relating to Nails for Use with Wood and Wood-Base Materials |

AMERICAN WOOD-PRESERVERS' ASSOCIATION (AWPA)

| | |
|---|---|
| AWPA C9 | (1997) Plywood - Preservative Treatment by Pressure Processes |
| AWPA M4 | (1996) Standard for the Care of Preservative-Treated Wood Products |
| AWPA P5 | (1997) Standards for Waterborne Preservatives |

CALIFORNIA REDWOOD ASSOCIATION (CRA)

| | |
|---|---|
| CRA RIS-01-SS | (1997) Standard Specifications for Grades of California Redwood Lumber |

DEPARTMENT OF COMMERCE (DOC)

| | |
|---|---|
| DOC PS 1 | (1996) Voluntary Product Standard - Construction and Industrial Plywood |

FACTORY MUTUAL ENGINEERING AND RESEARCH (FM)

| | |
|---|---|
| FM LPD 1-49 | (1995) Loss Prevention Data Sheet - Perimeter Flashing |

NATIONAL HARDWOOD LUMBER ASSOCIATION (NHLA)

| | |
|---|---|
| NHLA Rules | (1994) Rules for the Measurement & Inspection of Hardwood & Cypress |

NORTHEASTERN LUMBER MANUFACTURERS ASSOCIATION (NELMA)

| | |
|---|---|
| NELMA Grading Rules | (1997) Standard Grading Rules for Northeastern Lumber |

SOUTHERN CYPRESS MANUFACTURERS ASSOCIATION (SCMA)

| | |
|---|---|
| SCMA Specs | (1986; Supple No. 1, Aug 1993) Standard Specifications for Grades of Southern Cypress |

SOUTHERN PINE INSPECTION BUREAU (SPIB)

| | |
|---|---|
| SPIB Rules | (1994; Supple 8 thru 11) Standard Grading Rules for Southern Pine Lumber |

WEST COAST LUMBER INSPECTION BUREAU (WCLIB)

| | |
|---|---|
| WCLIB Std 17 | (1996; Supples VII(A-E), VIII(A-C)) |

Grading Rules for West Coast Lumber

WESTERN WOOD PRODUCTS ASSOCIATION (WWPA)

WWPA Grading Rules (1999) Western Lumber Grading Rules 95

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Nailers and Nailing Strips

Drawings of field erection details, including materials and methods of fastening nailers in conformance with Factory Mutual wind uplift rated systems specified in other Sections of these specifications.

SD-07 Certificates

Grading and Marking

Manufacturer's certificates (approved by an American Lumber Standards approved agency) attesting that lumber and material not normally grade marked meet the specified requirements. Certificate of Inspection for grade marked material by an American Lumber Standards Committee (ALSC) recognized inspection agency prior to shipment.

Insulation

Certificate attesting that the cellulose, perlite, glass and mineral fiber,glass mat gypsum roof board, polyurethane, or polyisocyanurate insulation furnished for the project contains recovered material, and showing an estimated percent of such recovered material.

1.3 DELIVERY AND STORAGE

Materials shall be delivered to the site in undamaged condition, stored off ground in fully covered, well ventilated areas, and protected from extreme changes in temperature and humidity. Laminated timber shall be handled and stored in accordance with AITC 111 or APA EWS R540C.

PART 2 PRODUCTS

2.1 LUMBER AND SHEATHING

2.1.1 Grading and Marking

2.1.1.1 Lumber Products

Lumber shall bear an authorized gradestamp or grademark recognized by ALSC, or an ALSC recognized certification stamp, mark, or hammerbrand. Surfaces that are to be exposed to view shall not bear grademarks, stamps, or any

type of identifying mark. Hammer marking will be permitted on timbers when all surfaces will be exposed to view.

2.1.1.2 Plywood and Other Sheathing Products

Materials shall bear the grademark or other identifying marks indicating grades of material and rules or standards under which produced, including requirements for qualifications and authority of the inspection organization. Except for plywood , bundle marking will be permitted in lieu of marking each individual piece. Surfaces that are to be exposed to view shall not bear grademarks or other types of identifying marks.

2.1.2 Sizes

Lumber and material sizes shall conform to requirements of the rules or standards under which produced. Unless otherwise specified, lumber shall be surfaced on four sides. Unless otherwise specified, sizes indicated are nominal sizes, and actual sizes shall be within manufacturing tolerances allowed by the standard under which the product is produced.

2.1.3 Treatment

Exposed areas of treated wood that are cut or drilled after treatment shall receive a field treatment in accordance with AWPA M4. Items of all-heart material of cedar, cypress, or redwood will not require preservative treatment, except when in direct contact with soil. Except as specified for all-heart material of the previously mentioned species, the following items shall be treated:

a. Wood members in contact with or within 455 mm of soil.

b. Wood members in contact with water.

c. Wood members exposed to the weather including those used in builtup roofing systems or as nailing strips or nailers over fiberboard or gypsum-board wall sheathing as a base for wood siding.

d. Wood members set into concrete regardless of location, including flush-with-deck wood nailers for roofs.

e. Wood members in contact with concrete that is in contact with soil or water or that is exposed to weather.

2.1.3.1 Plywood

Plywood shall be treated in accordance with AWPA C9 with waterborne preservatives listed in AWPA P5 to a retention level as follows:

a. 4 kg per cubic meter (0.25 pcf) intended for above ground use.

b. 6.4 kg per cubic meter (0.40 pcf) intended for ground contact and fresh water use.

2.1.4 Moisture Content

At the time lumber and other materials are delivered and when installed in the work their moisture content shall be as follows:

a. Treated and Untreated Lumber Except Roof Planking: 100 mm or less, nominal thickness, 19 percent maximum. 125 mm or more, nominal thickness, 23 percent maximum in a 75 mm perimeter of the timber cross-section.

b. Not used.

c. Materials Other Than Lumber: In accordance with standard under which product is produced.

2.1.5 Sheathing

Sheathing shall be fiberboard for wall sheathing; and plywood, wood structural panels, or wood for roof sheathing.

2.1.5.1 Fiberboard

Fiberboard shall conform to ASTM C 208, Type IV, Grade 2, Structural Grade, or AHA A194.1, Type IV, Grade 2 asphalt impregnated or asphalt coated to be water-resistant but vapor permeable.

2.1.6 Miscellaneous Wood Members

2.1.6.1 Nonstress Graded Members

Members shall include bridging, corner bracing, furring, grounds, and nailing strips. Members shall be in accordance with TABLE I for the species used. Sizes shall be as follows unless otherwise shown:

| Member | Size mm (inch) |
|---|---|
| Bridging | 25 x 75 (1 x 3) or 25 x 100 (1 x 4) for use between members 50 x 300 (2 x 12) and smaller; 50 x 100 (2 x 4) for use between members larger than 50 x 300 (2 x 12). |
| Corner bracing | 25 x 100 (1 x 4). |
| Furring | 25 (1) x 50 (2) |
| Nailing strips | 25 x 75 (1 x 3) or 25 x 100 (1 x 4) when used as shingle base or interior finish, otherwise 50 mm (2 inch) stock. |

2.1.6.2 Blocking

Blocking shall be standard or number 2 grade.

2.2 ACCESSORIES AND NAILS

Markings shall identify both the strength grade and the manufacturer. Accessories and nails shall conform to the following:

2.2.1 Anchor Bolts

ASTM A 307, size as indicated, complete with nuts and washers.

2.2.2 Bolts: Lag, Toggle, and Miscellaneous Bolts and Screws

Type, size, and finish best suited for intended use. Finish options include zinc compounds, cadmium, and aluminum paint impregnated finishes.

2.2.3 Expansion Shields

Type and size best suited for intended use.

2.2.4 Nails and Staples

ASTM F 547, size and type best suited for purpose; staples shall be as recommended by the manufacturer of the materials to be joined. For sheathing, length of nails shall be sufficient to extend 25 mm into supports. In general, 8-penny or larger nails shall be used for nailing through 25 mm thick lumber and for toe nailing 50 mm thick lumber; 16-penny or larger nails shall be used for nailing through 50 mm thick lumber. Nails used with treated lumber and sheathing shall be galvanized. Nailing shall be in accordance with the recommended nailing schedule contained in AF&PA T11. Where detailed nailing requirements are not specified, nail size and spacing shall be sufficient to develop an adequate strength for the connection. The connection's strength shall be verified against the nail capacity tables in AF&PA T01. Reasonable judgement backed by experience shall ensure that the designed connection will not cause the wood to split. If a load situation exceeds a reasonable limit for nails, a specialized connector shall be used.

2.2.5 Poultry Netting

ASTM A 116: No. 14-1/2 chick fence, 25 mm mesh size.

2.2.6 Tie Wire

Galvanized steel wire, not less than 1.5 mm (16 guage) in size.

2.3 INSULATION

Thermal resistance of insulation shall be not less than the R-values shown. R-values shall be determined at 24 degrees C in accordance with ASTM C 518. Insulation shall contain the highest practicable percentage of recovered material which has been recovered or diverted from solid waste, but not including material reused in a manufacturing process. Where two materials have the same price and performance, the one containing the higher recovered material content shall be provided. Insulation shall be the standard product of a manufacturer and factory marked or identified with manufacturer's name or trademark and R-value. Identification shall be on individual pieces or individual packages. Materials containing more than one percent asbestos will not be allowed.

2.3.1 Batt or Blanket

2.3.1.1 Mineral Fiber Blanket

Mineral fiber blanket shall conform to ASTM C 553, Type I, Class 6. Blankets shall be sized to suit construction conditions, resilient type for use below and above ambient temperature to 195 degrees C. Blankets shall have a factory applied vapor-barrrier facing on one side with 50 mm nailing tabs on both edges. Vapor barriers shall be fire retardant, high vapor transmission, and aluminum foil laminated to crepe paper type conforming to ASTM C 1136, Type II. Nominal density shall be 12 kg per cubic meter.

2.3.1.2 Acoustical Batt or Blanket Insulation

ASTM C 665, Miner fiber, Type I unfaced insulation, width as required for steel stud construction.

2.3.2 Sill Sealer

Mineral wool, 25 mm thick and compressible to 0.8 mm, width of sill, designed to perform as an air, dirt, and insect seal in conformance with ASTM C 665, Type I.

2.3.3 Rigid Insulation

2.3.3.1 Polystyrene Board

Polystyrene board shall be extruded and conform to ASTM C 578, Type IV.

2.3.3.2 Polyurethane or Polyisocyanurate Board

Polyurethane or polyisocyanurate board shall have a minimum recovered material content of 9 percent by weight of core material in the polyurethane or polyisocyanurate portion. Unfaced preformed polyurethane shall conform to ASTM C 591. Faced polyisocyanurate shall conform to ASTM C 1289.

2.3.3.3 Glass Fiber or Insulation Board

Glass mat gypsum roof board shall conform to ASTM C 1177/C 1177M, flame spread 0, smoke developed 0, psi 500, water resistant. Glass fiber or insulation board shall conform to ASTM C 612, Type 1A with a minimum recovered material content of 6 percent by weight of glass fiber core material.

2.4 VAPOR RETARDER

Vapor retarder shall be polyethylene sheeting conforming to ASTM E 154 or other equivalent material. Vapor retarder shall have a maximum vapor permeance rating of 29 ng per Pa per second per square meter (0.5 perms) as determined in accordance with ASTM E 96, unless otherwise specified.

PART 3 EXECUTION

3.1 INSTALLATION OF FRAMING

3.1.1 General

General framing shall be in accordance with AF&PA T11.Members shall be closely fitted, accurately set to required lines and levels, and rigidly secured in place. Members shall be framed for passage of ducts. Members shall be cut, notched, or bored in accordance with applicable requirements of AF&PA T01 for the passage of pipes, wires, or conduits. Rafters, purlins, and joists shall be set with crown edge up. Framing shall be kept at least 50 mm away from chimneys and 100 mm away from fireplace backwalls. When joists, beams, and girders are placed on masonry or concrete, a wood base plate shall be positioned and leveled with grout. The joist, beam, or girder shall then be placed on the plate. When joists, beams, and girders are set into masonry or concrete, a pocket shall be formed into the wall. The joist, beam, or girder shall then be placed into the pocket and leveled with a steel shim.

3.1.2 Blocking

Blocking shall be provided as necessary for application of toilet accessories, ADA grab bars, and wood trim items as specified, and other materials or building items as required. Blocking shall be cut to fit snugly between framing members and rigidly nailed thereto.

3.2 INSTALLATION OF SHEATHING

3.2.1 Fiberboard

Sheathing shall be applied with edges 3 mm apart at joints, fitted snugly at abutting frames of openings, and nailed or stapled in accordance with the manufacturer's approved instructions. Sheets shall be applied vertically, extended over top and bottom plates, and with all vertical and horizontal joints over supports.

3.3 INSTALLATION OF MISCELLANEOUS WOOD MEMBERS

3.3.1 Nailers and Nailing Strips

Nailers and nailing strips shall be provided as necessary for the attachment of finish materials. Nailers used in conjunction with roof deck installation shall be installed flush with the roof deck system. Stacked nailers shall be assembled with spikes or nails spaced not more than 450 mm on center and staggered. Beginning and ending nails shall not be more than 150 mm for nailer end. Ends of stacked nailers shall be offset approximately 300 mm in long runs and alternated at corners. Anchors shall extend through the entire thickness of the nailer. Strips shall be run in lengths as long as practicable, butt jointed, cut into wood framing members when necessary, and rigidly secured in place. Nailers and nailer installation for Factory Mutual wind uplift rated roof systems specified in other Sections of these specifications shall conform to the recommendations contained in FM LPD 1-49.

3.4 INSTALLATION OF INSULATION

Insulation shall be installed after construction has advanced to a point that the installed insulation will not be damaged by remaining work. For thermal insulation the actual installed thickness shall provide the thermal resistance specified. For acoustical insulation the installed thickness shall be as specified. Insulation shall be installed on the weather side of such items as electrical boxes and water lines. Unless otherwise specified, installation shall be in accordance with the manufacturer's recommendation. Impaling of insulation on spindle or prong-type insulation anchors will not be permitted. Insulation installation above ceiling shall be laid over the top of the ceiling suspension system runners. Edges of batts or blankets shall be butted together to form a continuous seal.

3.5 INSTALLATION OF VAPOR RETARDER

Vapor retarder shall be applied to provide a continuous barrier at window and door frames, and at all penetrations such as electrical outlets and switches, plumbing connections, and utility service penetrations. Joints in the vapor retarder shall be lapped and sealed according to the manufacturer's recommendations.

**3.6 Paragraph deleted (am#2)**

3.7 TABLES

TABLE I. SPECIES AND GRADE

Subflooring, Roof Sheathing, Wall Sheathing, Furring

| Grading Rules | Species | Const Standard | No. 2 Comm | No. 2 Board Comm | No. 3 Comm |
|---|---|---|---|---|---|
| NHLA Rules | | | | | |
| | Cypress | | | X | |
| NELMA Grading Rules | | | | | |
| | Northern White Cedar | | | | X |
| | Eastern White Pine | X | | | |
| | Northern Pine | X | | | |
| | Balsam Fir | | | | X |
| | Eastern Hemlock-Tamarack | | | | X |
| CRA RIS-01-SS | | | | | |
| | Redwood | | X | | |
| SCMA Specs | | | | | |
| | Cypress | | | X | |
| SPIB Rules | | | | | |
| | Southern Pine | | X | | |
| WCLIB Std 17 | | | | | |
| | Douglas Fir-Larch | X | | | |
| | Hem-Fir | X | | | |
| | Sitka Spruce | X | | | |
| | Mountain Hemlock | X | | | |
| | Western Cedar | X | | | |
| WWPA Grading Rules | | | | | |
| | Douglas Fir-Larch | X | | | |
| | Hem-Fir | X | | | |
| | Idaho White Pine | X | | | |
| | Lodgepole Pine | | | X | |
| | Ponderosa Pine | | | X | |
| | Sugar Pine | | | X | |
| | Englemann Spruce | | | X | |
| | Douglas Fir South | | | X | |
| | Mountain Hemlock | | | X | |
| | Subalpine Fir | | | X | |
| | Western Cedar | | | X | |

TABLE II. SPECIES AND GRADE

Wood Bumpers

| Grading Rules | Species | No. 1 | No. 2 |
|---|---|---|---|
| NHLA Rules | | | |
| | Red Oak | X | |
| NELMA Grading Rules | | | |
| | Northern Pine | | X |

TABLE II. SPECIES AND GRADE

Wood Bumpers

| Grading Rules | Species | No. 1 | No. 2 |
|---|---|---|---|
| | Eastern Hemlock-Tamarack | | X |
| SPIB Rules | | | |
| | Southern Pine | X | |
| WCLIB Std 17 | | | |
| | Douglas Fir-Larch | | X |
| | Hem-Fir | | X |
| WWPA Grading Rules | | | |
| | Douglas Fir-Larch | | X |
| | Hem-Fir | | X |
| | Douglas Fir-South | | X |

-- End of Section --

SECTION 08330

OVERHEAD COILING DOORS
**06/97**
**Amendment 0002**

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

| | |
|---|---|
| ASTM A 653/A 653M | (1999a) Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip process |
| ASTM E 84 | (1999) Surface Burning Characteristics of Building Materials |
| ASTM E 330 | (1997el) Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference |

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS (ASHRAE)

| | |
|---|---|
| ASHRAE HDBK-IP | (1997) Handbook, Fundamentals I-P Edition |
| ASHRAE HDBK-SI | (1997) Handbook, Fundamentals SI Edition |

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

| | |
|---|---|
| NEMA ICS 2 | (1993) Industrial Control and Systems Controllers, Contactors, and Overload Relays Rated Not More Than 2,000 Volts AC or 750 Volts DC |
| NEMA ICS 6 | (1993) Industrial Control and Systems Enclosures |
| NEMA MG 1 | (1998) Motors and Generators |

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

| | |
|---|---|
| NFPA 70 | (1999) National Electrical Code |
| NFPA 80 | (1999) Fire Doors and Fire Windows |

1.2 DESCRIPTION

Overhead rolling doors shall be spring counterbalanced, rolling type, with interlocking slats, complete with guides, fastenings, hood, brackets, and operating mechanisms, and shall be designed for use on openings as indicated. Each door shall be provided with a permanent label showing the manufacturer's name and address and the model/serial number of the

door. Doors in excess of the labelled size shall be deemed oversize and shall be provided with a listing agency oversize label, or a listing agency oversize certificate, or a certificate signed by an official of the manufacturing company certifying that the door and operator have been designed to meet the specified requirements.

1.2.1 Wind Load Requirements

Doors and components shall be designed to withstand the minimum design wind load of 960 Pa Doors shall be constructed to sustain a superimposed load, both inward and outward, equal to 1-1/2 times the minimum design wind load. Calculations shall be provided that prove the door design meets the design windload requirements. Recovery shall be at least 3/4 of the maximum deflection within 24 hours after the test load is removed. Sound engineering principles may be used to interpolate or extrapolate test results to door sizes not specifically tested

1.2.2 Operational Cycle Life

The counterbalance springs shall be subject to movement, wear, or stress fatigue shall be designed to operate through a minimum number of 10 cycles per day. One complete cycle of door operation is defined as when the door is in the closed position, moves to the full open position, and returns to the closed position.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Overhead Coiling Door Unit; .

Drawings showing the location of each door including schedules. Drawings shall include elevations of each door type, details and method of anchorage, details of construction, location and installation of hardware, shape and thickness of materials, details of joints and connections, and details of guides, power operators, controls, and other fittings.

SD-03 Product Data

Overhead Coiling Door Unit; .

Manufacturer's catalog data, test data, and summary of forces and loads on the walls/jambs.

Overhead Coiling Door Unit; .

Manufacturer's preprinted installation instructions.

SD-04 Samples

Overhead Coiling Door Unit; .

Manufacturer's standard color samples of factory applied finishes.

SD-10 Operation and Maintenance Data

Operation Manual; .

Maintenance and Repair Manual; .

Six copies of the system operation manual and system maintenance and repair manual for each type of door and control system.

1.4 DELIVERY AND STORAGE

Doors shall be delivered to the jobsite wrapped in a protective covering with the brands and names clearly marked thereon. Doors shall be stored in a dry location that is adequately ventilated and free from dirt and dust, water, and other contaminants, and in a manner that permits easy access for inspection and handling.

1.5 WARRANTY

Manufacturer's standard performance guarantees or warranties that extend beyond a 1-year period shall be provided.

1.6 OPERATION AND MAINTENANCE MANUALS

Operating instructions outlining the step-by-step procedures required for motorized door and shutter operation for the overhead rolling door unit shall be provided. The instructions shall include the manufacturer's name, model number, service manual, parts list, and brief description of all equipment and their basic operating features. Maintenance instructions listing routine maintenance procedures, possible breakdowns and repairs, troubleshooting guides, and simplified diagrams for the equipment as installed shall be provided. A complete list of parts and supplies, source of supply, and a list of the high mortality maintenance parts shall be provided.

PART 2 PRODUCTS

2.1 OVERHEAD COILING DOORS

Doors shall be surface-mounted type with guides at jambs set back a sufficient distance to clear the opening. Exterior doors shall be mounted on interior side of walls.

2.1.1 Curtains

The curtains shall roll up on a barrel supported at the head of opening on brackets, and shall be balanced by helical torsion springs. Steel slats for doors less than 4.6 m wide shall be minimum bare metal thickness of 0.71 mm. .

2.1.1.1 Non-Insulated Curtains

Curtains shall be formed of interlocking slats of shapes standard with the manufacturer. Slats for exterior doors shall be flat type.

2.1.1.2 Insulated Curtains

The slat system shall supply a minimum R-value of 0.88 M2 K/W when calculated in accordance with ASHRAE HDBK-IP ASHRAE HDBK-SI. Slats shall be of the flat type as standard with the manufacturer. Slats shall consist

of a urethane core not less than 17 mm thick, completely enclosed within metal facings. Exterior face of slats shall be gauge as specified for curtains. Interior face shall be not lighter than 0.56 mm. The insulated slat assembly shall have a flame spread rating of not more than 25 and a smoke development factor of not more than 50 when tested in accordance with ASTM E 84.

2.1.2 Endlocks and Windlocks

The ends of each alternate slat for interior doors shall have steel endlocks of manufacturer's stock design. Endlocks shall be provided in accordance with manufacturer's listing on fire doors when required by test results performed by the code listing agency.

2.1.3 Bottom Bar

The curtain shall have a standard bottom bar consisting of two hot-dip galvanized steel angles for steel doors. A sensing edge shall be attached to the bottom bar of doors that are electric-power operated.

2.1.4 Guides

Guides shall be steel structural shapes or formed steel shapes, of a size and depth to provide proper clearance for operation and resistance under the design windload. Guides shall be attached to adjoining construction with fasteners recommended by the manufacturer. Spacing of fasteners shall be as required to meet the minimum design windload. Doors and guides in hazardous areas shall have static grounding.

2.1.5 Barrel

The barrel shall be steel pipe or commercial welded steel tubing of proper diameter for the size of curtain. Deflection shall not exceed 2.5 mm per meter of span. Ends of the barrel shall be closed with metal plugs, machined to fit the pipe. Aluminum plugs are acceptable on non-fire door barrels.

2.1.6 Springs

Oil tempered helical steel counter-balance torsion springs shall be installed within the barrel and shall be capable of producing sufficient torque to assure easy operation of the door curtain. Access shall be provided for spring tension adjustment from outside of the bracket without removing the hood.

2.1.7 Brackets

Brackets shall be of steel plates to close the ends of the roller-shaft housing, and to provide mounting surfaces for the hood. An operation bracket hub and shaft plugs shall have sealed prelubricated ball bearings.

2.1.8 Hoods

Hoods shall be steel with minimum bare metal thickness of 0.56 mm formed to fit contour of the end brackets, and shall be reinforced with steel rods, rolled beads, or flanges at top and bottom edges. Multiple segment and single piece hoods shall be provided with support brackets of the manufacturer's standard design as required for adequate support.

2.1.9 Weatherstripping

Exterior doors shall be fully weatherstripped. A compressible and replaceable weather seal shall be attached to the bottom bar. Weather seal

at door guides shall be continuous vinyl or neoprene, bulb or leaf type, or shall be nylon-brush type. A weather baffle shall be provided at the lintel or inside the hood. Weatherstripping shall be easily replaced without special tools.

2.1.10 Operation

Doors shall be operated by means of electric power with auxiliary chain hoist. Equipment shall be designed and manufactured for usage in non-hazardous.

2.1.10.1 Electric Power Operator With Auxiliary Chain Hoist Operation

Electric power operators shall be heavy-duty industrial type. The unit shall operate the door through the operational cycle life specified. The electric power operator shall be complete with electric motor, auxiliary operation, necessary means of reduction for medium-duty doors, brake, mounting brackets, push button controls, limit switches, magnetic reversing starter, and all other accessories necessary to operate components specified in other paragraphs of this section. The operator shall be so designed that the motor may be removed without disturbing the limit-switches settings and without affecting the emergency chain operator. Doors shall be provided with an auxiliary operator for immediate emergency manual operation of the door in case of electrical failure. Auxiliary operation shall be by means of galvanized endless chain extending to within 915 mm of the floor. The emergency manual operating mechanism shall be so arranged that it may be operated from the floor without affecting the settings of the limit switches. A mechanical device shall be included that will disconnect the motor from the drive operating mechanism when the auxiliary operator is used. Where control voltages differ from motor voltage, a control voltage transformer shall be provided in and as part of the electric power operator system. Control voltage shall not exceed 120 volts.

a. Motors: Drive motors shall conform to NEMA MG 1, shall be high-starting torque, reversible type, and shall be of sufficient wattage and torque output to move the door in either direction from any position at a speed range of 0.18 m per second (6 to 8 inches per second) without exceeding the rated capacity. Motors shall be suitable for operation on 220 volts, 60 hertz, 3- phase current and shall be suitable for across-the-line starting. Motors shall be designed to operate at full capacity over a supply voltage variation of plus or minus 10 percent of the motor voltage rating. Motors shall be provided with overload protection.

d. Electrical Work: Conduit and wiring necessary for proper operation shall be provided under Section 16415 ELECTRICAL WORK, INTERIOR. Flexible connections between doors and fixed supports shall be made with flexible type SJO cable, except in hazardous locations where wiring shall conform to NFPA 70, as appropriate. The cable shall have a spring-loaded automatic take up reel or a coil cord equivalent device.

2.1.11 Inertia Brake

Overhead rolling door shall have a mechanical inertia brake device which will stop the door from free fall in any position, should there be a failure in the motor operator brake or roller chain drive. The unit shall be capable of being reset with a back drive action.

2.1.12 Locking

Locking for motor operated doors shall consist of self-locking gearing with chain lock for emergency hand chain.

2.1.13 Finish

Steel slats and hoods shall be hot-dip galvanized G90 in accordance with ASTM A 653/A 653M, and shall be treated for paint adhesion and shall receive a factory baked-on finish coat. The paint system shall withstand a minimum of 1500 hours without blistering, bubbling, or rust. Surfaces other than slats, hood, and faying surfaces shall be cleaned and treated to assure maximum paint adherence and shall be given a factory dip or spray coat of rust inhibitive metallic oxide or synthetic resin primer. Color shall be in accordance with Section 09915 COLOR SCHEDULE.

PART 3 EXECUTION

3.1 INSTALLATION

Doors shall be installed in accordance with approved detail drawings and manufacturer's instructions. Anchors and inserts for guides, brackets, motors, switches, hardware, and other accessories shall be accurately located. Upon completion, doors shall be free from warp, twist, or distortion. Doors shall be lubricated, properly adjusted, and demonstrated to operate freely. Fire doors shall be installed in conformance with the requirements of NFPA 80 and the manufacturer's instructions.

-- End of Section --

SECTION 09510

ACOUSTICAL CEILINGS
**08/96**
**Amendment 0002**

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

| | |
|---|---|
| ASTM C 635 | (1995) Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings |
| ASTM C 636 | (1996) Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels |
| ASTM E 119 | (1995a) Fire Tests of Building Construction and Materials |
| ASTM E 580 | (1996) Application of Ceiling Suspension Systems for Acoustical Tile and Lay In Panels in Areas Requiring Seismic Restraint |
| ASTM E 1264 | (1990) Standard Classification for Acoustical Ceiling Products |
| ASTM E 1414 | (1991a) Standard Test for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum |

COE TECHNICAL INSTRUCTIONS (TI)

| | |
|---|---|
| TI 809-04 | (1998) Seismic Design for Buildings |

UNDERWRITERS LABORATORIES (UL)

| | |
|---|---|
| UL Fire Resist Dir | (1997) Fire Resistance Directory (2 Vol) |

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Approved Detail Drawings; G

Drawings showing suspension system, method of anchoring and fastening, details, and reflected ceiling plan.

SD-03 Product Data

Acoustical Ceiling Systems; G

Manufacturer's descriptive data, catalog cuts, and installation instructions. Submittals which do not provide adequate data for the product evaluation will be rejected.

SD-04 Samples

Acoustical Units; G

Two samples of each type of acoustical unit and each type of suspension grid tee section showing texture, finish, and color.

SD-06 Test Reports

Fire Resistive Ceilings; G
Ceiling Attenuation Class and Test; G

Reports by an independent testing laboratory attesting that acoustical ceiling systems meet specified fire endurance and sound transmission requirements. Data attesting to conformance of the proposed system to Underwriters Laboratories requirements for the fire endurance rating listed in UL Fire Resist Dir may be submitted in lieu of test reports.

SD-07 Certificates

Acoustical Units; G

Certificate attesting that the mineral based acoustical units furnished for the project contains recycled material and showing an estimated percent of such material.

## 1.3 GENERAL REQUIREMENTS

Acoustical treatment shall consist of sound controlling units mechanically mounted on a ceiling suspension system. The unit size, texture, finish, and color shall be as specified. The Contractor has the option to substitute inch-pound (I-P) Recessed Light Fixtures (RLF) for metric RLF. If the Contractor opts to furnish I-P RLF, other ceiling elements like acoustical ceiling tiles, air diffusers, air registers and grills, shall also be I-P products. The Contractor shall coordinate the whole ceiling system with other details, like the location of access panels and ceiling penetrations, etc., shown on the drawings. If I-P products are used, the Contractor shall be responsible for all associated labor and materials and for the final assembly and performance of the specified work and products. The location and extent of acoustical treatment shall be as shown on the approved detail drawings. Acoustical Ceiling to be tated for use i high humidity condition.

## 1.4 DELIVERY AND STORAGE

Materials shall be delivered to the site in the manufacturer's original unopened containers with brand name and type clearly marked. Materials shall be carefully handled and stored in dry, watertight enclosures. Immediately before installation, acoustical units shall be stored for not less than 24 hours at the same temperature and relative humidity as the space where they will be installed in order to assure proper temperature and moisture acclimation.

1.5 ENVIRONMENTAL REQUIREMENTS

A uniform temperature of not less than 16 degrees C nor more than 29 degrees C and a relative humidity of not more than 70 percent shall be maintained before, during, and after installation of acoustical units.

1.6 SCHEDULING

Interior finish work such as plastering, concrete and terrazzo work shall be complete and dry before installation. Mechanical, electrical, and other work above the ceiling line shall be completed and heating, ventilating, and air conditioning systems shall be installed and operating in order to maintain temperature and humidity requirements.

1.7 WARRANTY

Manufacturer's standard performance guarantees or warranties that extend beyond a one year period shall be provided. Standard performance guarantee or warranty shall contain an agreement to repair or replace acoustical panels that fail within the warranty period. Failures include, but are not limited to, sagging and warping of panels; rusting and manufacturers defects of grid system.

1.8 EXTRA MATERIALS

Spare tiles of each color shall be furnished at the rate of 5 tiles for each 1000 tiles installed. Tiles shall be from the same lot as those installed.

PART 2 PRODUCTS

2.1 ACOUSTICAL UNITS

Acoustical units shall conform to ASTM E 1264, Class A, and the following requirements:

2.1.1 Units for Exposed-Grid System

Type: IV (mineral fiber with membrane-faced overlay) . Type IV acoustical units shall have a minimum recycled material content of 70 percent.

Minimum NRC: .70 when tested on mounting No. E-400

Pattern: E.

Nominal size: 600 by 600 mm.

Edge detail: Beveled Tegular.

Finish: Factory-applied standard white finish .

Minimum LR coefficient: .89.

Minimum CAC: .35.

2.2 SUSPENSION SYSTEM

Suspension system shall be exposed-grid , and shall conform to ASTM C 635 for intermediate-duty systems . Surfaces exposed to view shall be aluminum or steel with a factory-applied white baked polyester paint or anodized finish . Wall molding shall have a flange of not less than 23 mm . Inside and outside corner caps shall be provided. Suspended ceiling framing system shall have the capability to support the finished ceiling, light

fixtures, air diffusers, and accessories, as shown. The suspension system shall have a maximum deflection of 1/360 of span length. Seismic details shall conform to the guidance in TI 809-04 and ASTM E 580.

2.3 HANGERS

Hangers shall be galvanized steel wire. Hangers and attachment shall support a minimum ultimate vertical load without failure of supporting material or attachment.

2.4 ACCESS PANELS

Access panels shall match adjacent acoustical units and shall be designed and equipped with suitable framing and fastenings for removal and replacement without damage. Panel shall be not less than 300 by 300 mm or more than An identification plate of 0.8 mm thick aluminum, 19 mm in diameter, stamped with the letters "AP" and finished the same as the unit, shall be attached near one corner on the face of each access panel.

2.5 FINISHES

Acoustical units and suspension system members shall have manufacturer's standard textures, patterns and finishes as specified. Ceiling suspension system components shall be treated to inhibit corrosion.

2.6 COLORS AND PATTERNS

Colors and patterns for acoustical units and suspension system components shall be as specified in Section 09915 Color Schedule.

2.7 CEILING ATTENUATION CLASS AND TEST

Ceiling attenuation class (CAC) range of acoustical units, when required, shall be determined in accordance with ASTM E 1414. Test ceiling shall be continuous at the partition and shall be assembled in the suspension system in the same manner that the ceiling will be installed on the project. System shall be tested with all acoustical units installed.

PART 3 EXECUTION

3.1 INSTALLATION

Acoustical work shall be provided complete with necessary fastenings, clips, and other accessories required for a complete installation. Mechanical fastenings shall not be exposed in the finished work. Hangers shall be laid out for each individual room or space. Hangers shall be placed to support framing around beams, ducts, columns, grilles, and other penetrations through ceilings. Main runners and carrying channels shall be kept clear of abutting walls and partitions. At least two main runners shall be provided for each ceiling span. Wherever required to bypass an object with the hanger wires, a subsuspension system shall be installed, so that all hanger wires will be plumb.

3.1.1 Suspension System

Suspension system shall be installed in accordance with ASTM C 636 and as specified herein. There shall be no hanger wires or other loads suspended from underside of steel decking.

3.1.1.1 Plumb Hangers

Hangers shall be plumb and shall not press against insulation covering ducts and pipes.

3.1.1.2 Splayed Hangers

Where hangers must be splayed (sloped or slanted) around obstructions, the resulting horizontal force shall be offset by bracing, countersplaying, or other acceptable means.

3.1.2 Wall Molding

Wall molding shall be provided where ceilings abut vertical surfaces. Wall molding shall be secured not more than from ends of each length and not more than on centers between end fastenings. Wall molding springs shall be provided at each acoustical unit in semi-exposed or concealed systems.

3.1.3 Acoustical Units

Acoustical units shall be installed in accordance with the approved installation instructions of the manufacturer. Edges of acoustical units shall be in close contact with metal supports, with each other, and in true alignment. Acoustical units shall be arranged so that units less than one-half width are minimized. **All exposed grid system acoustical tile units shall be held in place with manufacturer's standard hold-down clips. (am#2)**

3.2 CEILING ACCESS PANELS

Ceiling access panels shall be located directly under the items which require access.

3.3 CLEANING

Following installation, dirty or discolored surfaces of acoustical units shall be cleaned and left free from defects. Units that are damaged or improperly installed shall be removed and new units provided as directed.

-- End of Section --

SECTION 10442

INTERIOR SIGNAGE
**09/2000**
**Amendment 0002**

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

ALUMINUM ASSOCIATION (AA)

| | |
|---|---|
| AA DAF-45 | (1980) Designation System for Aluminum Finishes |
| AA SAA-46 | (1978) Standards for Anodized Architectural Aluminum |
| AA PK-1 | (1989) Registration Record of Aluminum Association Alloy Designations and Chemical Composition Limits for Aluminum Alloys in the Form of Castings and Ingot |

AMERICAN ARCHITECTURAL MANUFACTURERS ASSOCIATION (AAMA)

| | |
|---|---|
| AAMA 605.2 | (1992) Voluntary Specification for High Performance Organic Coatings on Architectural Aluminum Extrusions and Panels |

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

| | |
|---|---|
| ANSI Z97.1 | (1984) Safety Glazing Materials Used in Buildings. |

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

| | |
|---|---|
| ASTM B 211 | (1992a) Aluminum and Aluminum-Alloy Bar, Rod, and Wire |
| ASTM B 221 | (1992a) Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes |
| ASTM C 1036 | (1991) Flat Glass |

AMERICAN WELDING SOCIETY (AWS)

| | |
|---|---|
| AWS D1.1 | (1992) Structural Welding Code - Steel |

FEDERAL SPECIFICATIONS (FS)

| | |
|---|---|
| FS L-P-387 | (Rev. A; Am. 1; Int. Am. 2) Plastic Sheet, Laminated, Thermosetting (for Designation Plates). |

FEDERAL STANDARDS (FED-STD)

FED-STD 795 (Basic) Uniform Federal Accessibility Standards

FLAT GLASS MARKETING ASSOCIATION (FGMA)

FGMA-01 (1990) Glazing Manual

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Qualifications; G

Prior to start of sign installation, submit resumes of work experience for all installers. The work shall be done by qualified, experienced installers, working under a qualified supervisor. The supervisor shall have a minimum of 5 years experience in this area of work and shall be certified by the sign manufacturer.

Sign Schedule; G

Prior to sign fabrication, submit sign schedule indicating type, size, location, and message of signs to be furnished and installed.

Installation Procedures; G

Before installation, submit the sign manufacturer's printed instructions for installation of the signs. Include complete procedures, including preparation of wall or door surfaces, mounting techniques, and recommended adhesives, tapes, or fasteners.

SD-02 Shop Drawings

Interior Signage; G, AE
Drawings shall clearly show elevations of each sign type, dimensions, materials, typographic layouts, sizes, methods, finishes, anchorages, and other details of construction as well as relation to supporting and adjacent work where applicable. Drawings shall include typical layouts of each sign type showing graphic quality, letterforms, symbols, and type spacing, and a schedule showing the location of each sign type.

SD-03 Product Data

Interior Signage; G, AE
Submit manufacturer's catalog data, describing the sign type, materials, and fabrication for each sign type furnished for this project.

SD-04 Samples

Interior Signage; G, AE

Submit one full size sample of each sign type in the quality and

color specified. The samples may be installed in the work provided each sample is identified and location recorded.

Neon Signage; G, AE

Submit two samples of manufacturer's standard color chips for each material requiring color selection.

Samples to be submitted for approval to:

Architectural Section
Design Branch
Fort Worth District

SD-10 Operation and Maintenance Data

Sign Maintenance Instructions; G

Submit three copies of the sign manufacturer's maintenance instructions, including one quart of any special cleaning solution recommended and furnished by the manufacturer. Cleaning solution(s) shall be properly marked. Instructions shall include the recommended type of cleaning equipment and materials, cleaning methods, and cleaning cycles.

## 1.3 DELIVERY AND STORAGE

Deliver signs to the site in manufacturer's original wrappings and packages clearly labeled with the manufacturer's name, brand name, size and related information. Each sign shall be individually packaged. Store in a safe, dry, clean, and well ventilated area, protected from damage, soiling, and moisture. Store packages flat. Do not open containers until needed for installation unless verification inspection is required. Protective paper shall be removed only as necessary during fabrication, inspection, or installation in order to avoid scratching, chipping, or crazing the acrylic sheets.

# PART 2 PRODUCTS

## 2.1 GENERAL

Interior signs and graphics shall be provided as a total system. Signs shall be complete with lettering, framing as detailed, and related components for a complete installation. Signs shall be the standard product of a manufacturer regularly engaged in the manufacture of such products and shall essentially duplicate signs that have been in satisfactory use at least 2 years prior to bid opening.

## 2.2 MATERIALS AND FINISHES

### 2.2.1 Framing and Fasteners

#### 2.2.1.1 Aluminum Alloy Products

Aluminum extrusions shall be at least 3.2 mil thick, and aluminum plate or sheet shall be at least 1.5 mm thick. Extrusions shall conform to ASTM B 221; plate and sheet shall conform to ASTM B 209. Where anodic coatings are specified, alloy shall conform to AA PK-1 alloy designation 514.0. Exposed anodized aluminum finishes shall be as shown and shall conform to AA SAA-46.

#### 2.2.1.2 Finishes

Aluminum used for concealed framing of sign shall have a mill finish. Aluminum used for exposed surfaces shall have a bronze anodized finish. Anodized finish shall be AA DAF-45 designation AA-M10-C22-A32, Architectural Class II (0.01 mm to 0.02 mm ) for integral color.

2.2.1.3 Welding

Welded joints shall be heliarc welded in conformance with the AWS D1.1 and the Aluminum Association's publications.

2.2.1.4 Exposed Metal Fasteners

Exposed metal fasteners shall be hardened aluminum ASTM B 211, 6061, T6 Alloy.

2.2.1.5 Adhesives

Adhesives and adhesive tapes required for plastics, glass, and metals shall be the type recommended by the sign manufacturer.

2.2.2 Plastic

Signs shall be fabricated of Type ES melamine plastic conforming to FS L-P-387, Type NDP self-extinguishing or acrylic conforming to ANSI Z97.1. Plastic sheet used for signs shall be of new stock and free from defects which would impair strength, durability, and appearance. Clear face sheets shall be matte finish. Colored, opaque face plates and plaques shall be smooth finish.

2.2.3 Changeable Letter Boards

Changeable letter boards for building and floor directory signs shall be pre-slotted, nonfading, washable vinyl which accept molded plastic letters (white in color) with tabs that align the letters in the slots. Boards shall be 4.7 mm to 6.4 mm thick.

2.2.4 Glass

Glass shall be polished clear plate glass with clean cut edges conforming to ASTM C 1036. All glazing work shall be performed in accordance with applicable standards of the FGMA-01.

2.2.5 Signs

Signs, other than building directory signs, shall be matte, opaque colored acrylic plastic having top surface printed message, minimum thickness (including backing plate) sub-surface printed face plates shall be laminated to a backing plate. Signs shall conform to FED-STD 795.

2.2.5.1 Fabrication

All signs and sign components shall be shop fabricated, complete and ready for installation. Sign components shall be cut clean. Rounded corners, cut or ragged edges, edge build-up, bleeding or imperfections in the surfaces of the acrylic sheet will not be acceptable.

2.2.5.2 Paints and Inks

Paints and inks required shall be made for the surface material on which they are to be applied and as recommended by the manufacturer of the paint or ink. Prime coats or other surface pretreatments, where applicable, shall be included in the work. Paints, inks and all finishes shall not be the cause of discoloration, deterioration or delamination of any materials

used in the fabrication. Paints and inks shall be evenly applied without pinholes, scratches, peeling, or application marks. Paints may be alkyd, acrylic, epoxy, or urethane enamel that are qualified for listing on the applicable GSA qualified products list.

2.2.5.3 Messages

Messages for insert panels of office identification signs shall be:

b. Dry-transfer letters applied to paper card stock.

2.2.5.4 Letterforms and Graphics

a. Die-Cut Vinyl Letters

Vinyl sheeting for die-cut graphics shall conform to MS MIL-M-43719, minimum 0.08 mm film thickness. The sheeting shall include a positionable precoated pressure sensitive adhesive backing (Class 3). Die-cutting shall be executed in such a manner that all edges and corners of finished letterforms and graphics shall be true and clean. Letterforms and graphics with rounded positive or negative corners, nicked, cut or ragged edges, shall not be used. Permanently apply die-cut letters and graphics to sign surfaces in such a manner that all letter surface and edge areas are tightly and evenly adhered to the sign surface.

f. Letter Size and Style

Letterforms, including numbers, shall be helvetica medium style, upper case, shall be the height indicated in sign standards. unless otherwise specified or indicated. In addition,

(1) Edges and corners of finished letterforms shall be photographically precise, crisp, clean and free of ticks, discontinuous curves, line wave, cut or ragged edges, edge built-up, bleeding, surface pinholes and other imperfections. All letterforms shall conform to the prescribed letterform proportions.

(2) Alignment of letterforms shall maintain a horizontal baseline.

(3) Letter spacing shall be normal. Expanded or condensed spacing is not acceptable.

2.3 SIGN STANDARDS

2.3.1 Sign Grids

See drawings for the applicable sign types for sign dimensions and mounting heights.

2.3.2 Neon Signage

Neon signage shall be the standard product of a manufacturer regularly engaged in the manufacture of such products and shall essentially duplicate signs that have been in satisfactory usage for at least 2 years prior to bid opening. Signage noted in paragraph 1.2 shall be self contained, shop

fabricated, complete and ready for installation by the manufacturer; "The SignZone" (817) 237-5319 or approved equal. The self contained signs shall be mounted directly onto suspended bulkheads after all other work in the immediate vininity has been completed. Installed signage letters shall be uniform and secured per industry standards. The letters shall be attached to the case. The case is to be of PVC, black in color. The electronic transformer is to be in the case hidden from view.
**A clear sheet of plexiglass, which shall cover and extend 100mm beyond signage tubing, shall be mounted to each sign's case. (am#2)**

a. Messages: Refer to Architectural Drawings.

b. Neon Tubing: 10 mm White in color.

c. Letter Size and Style: 254 mm in height, single stroke CHARTPAX "MODERNE" upper case. Alignment of letters shall maintain a horizontal baseline.

d. Transformer Type: Electronics Transformer.

e. Tube Supports: Diversified components QS-1.

f. Warranty: 2 years manufacturer's warranty on transformers. 1 year on glass.

2.3.3 Electronic Menu Boards

Menu signage shall be a modular LED ASCII character display. Each character shall display green and be 30 mm high and 30 mm wide. Each menu board shall be mounted flush onto suspended bulkhead or wall after all other work in the immediate vicinity has been completed. Each menu board will operate via PC, which will be located in the offices adjacent to the Kitchen. The operating software shall be included.

Four menu boards shall be 24 characters wide and 16 rows high. Overall unit dimensions, including interline spacing shall be 737 mm wide and 1092 mm high by 117 mm deep. Two menu boards in the Carry-Out shall be 24 characters wide and 8 rows high. Overall unit dimensions, including interline spacing shall be 737 mm wide and 559 mm high by 117 mm deep.

a. LED brightness: 10MCD with a 170 dig. view angle. 100,000+ operating-hour service life.

b. Brightness Control: VIA downline signal (3 levels).

c. Communication Interface: RS-442 (perferred) or RS-232.

d. Modems: Communicates to PC via Hays or Hays-compatible (Bell 103A)

e. Voltage Input: 120 VAC @ 60 Hz.

f. Ambient Operating Temperature range: 0.0 deg. C to 40 deg. C.

g. Humidity Range: 10-95% non-condensing.

h. Data Cable: 22 gauge, twisted shielded pair, low loss data cable or the equivalent per local code.

2.3.4 Building Directory Sign

Directory shall be two- door style. Doors shall be sliding plate glass. Directories shall be furnished complete with all hardware including keyed cylinder lock.

2.3.4.1 Type AA2

The building directory shall be located in the main entrance lobby and consists of a permanent header panel with the name of the building or the major organization in the building, and a directory section that lists each tenant. The directory section shall be a changeable letter board. Sign design shall be as follows:

a. Colors: White letters on standard black background.

b. Dimensions: 3'-6" by 2'-0".

c. Message:

Heading - Header message. Floor- numbered- helvetica medium, 4-inch number height flush left.

Secondary Heading -Directory listing. Areas, offices, or names- upper and lower case helvetica medium, 3/4 inch capital letter height, flush left. Average line length- 38 characters per line.

2.3.4.2 Letters

Assortment of letters shall include three entire sets of the alphabet with emphasis on the most used characters and three sets of numbers.

2.3.4.3 Directory Listing(s)

The Contractor shall install the entire directory listing on the Building Directory from the following listing(s):

[Building Directory:

Room or Tenant Title Room Number]

2.3.5 Office Identification Signs

2.3.5.1 Type BB2 (Wall Mounted)

This type consist of a permanent header panel with the room number and an insert panel which identifies the tenant. The insert panel shall be a clear sleeve which will accept a paper or plastic insert with the name of the tenant. Sign design shall be as follows:

a. Colors:

Header panel - White number on standard black background.

Insert panel - White letters on background.

b. Dimensions: .

c. Message:

Room number - Helvetica medium, [38 mm in height][height as indicated], flush left.

Tenant name - Upper and lower case helvetica medium, capital letter height, flush left.

Secondary information - Upper and lower case helvetica regular, [13 mm capital letter height][letter height as indicated], flush left.

The insert area shall accommodate four lines with a maximum of 21 tiles or characters per line.

2.3.5.2 Type BB4 (Room Number Sign)

This type consists of a permanent header panel only (without an insert panel). Mounting height shall be (top edge of sign) above the floor]. Sign design shall be as follows:

a. Colors:

Header panel - Whitenumber on standard black background.

b. Dimensions: ][As indicated].

c. Message:

Room number - Helvetica medium, in height], flush left.

2.3.6 Service Identification Sign (Type BB7)

This type identifies restrooms, telephones, and other services. Sign design shall be as follows:

a. Colors:

Symbols - _Blue____ symbol (where appropriate) on white background.

b. Dimensions: ][As indicated].

c. Message:

[Service name - Helvetica medium upper and lower case,capital letter height], centered.

The message line will accommodate a maximum of 7 tiles.]

[The message line will accommodate a maximum of 9 tiles.]

2.3.7 Directional Signs

2.3.7.1 Messages

Messages are placed flush left or flush right to the arrow. Arrows pointing left, up, or down, will have flush left messages, and arrows point to the right will have flush right messages. The arrow is centered in the space between the message and the edge of the sign.

2.3.7.2 Type CC2 Bulletin Board.

Sign design shall be as follows:

a. Colors: White letters, numbers on standard Black background.

b. Dimensions: Slats - 3'-6" by 6'-0"

c. Message: Upper and lower case helvetica medium, 2 incapital letter height], flush left .

Average line length, 47 characters per line.

### 2.3.8 Regulatory Signs

Symbols, such as for "No Smoking", shall be black with a standard red circle and bar on a white background. Written messages are not required.

## 2.4 SIGNAGE SCHEDULE

All Building directories shall be coordinated with the user for the tenant listings. All BB2 sign types shall have the room message shall be coordinated with the user before ordering.

See ARCH drwg. IB04 for schedule.

See ARCH drwg. IB06- IB08 for signage placement.

# PART 3 EXECUTION

## 3.1 GENERAL

Signs shall be mounted in place after all other interior work in the immediate vicinity, including painting, has been completed. Installed signs shall be uniform and secured.

## 3.2 INSTALLATION PREPARATION

Inspect all room and areas to have signs. Repair holes, cracks, depressions, or rough areas using recommended materials. Walls shall be free of any foreign materials. Minimum wall temperature before, during and after installation and requirements for conditioning adhesive, shall comply with the sign and adhesive manufacturer's instructions. Sign installation shall constitute validation by the Contractor that the conditions in the area meet all requirements for satisfactory installation.

## 3.3 INSTALLATION

Height and location of the signs shall be as directed by the Contracting Officer unless otherwise specified. Neon signage and Menu Boards shall be installed per manufacturer's instruction and where shown in the Drawings. Signs shall be mounted using vinyl tape, adhesive, or screws, as recommended by the manufacturer for the specific application. Adhesive shall cover the entire back surface of the sign panels. Screw attached signs shall be attached with two exposed non-ferrous screws, one centered at each end in a manner that will not interfere with the message. Signs larger than two inches in height shall be attached with four screws, equally spaced, one in each corner. Exposed screws shall have round heads. Color of screws shall be match the background color of the sign.

### 3.3.1 Sign Type BB7

Restroom door identification signs shall be centered on the door. Signs with the handicapped symbol shall be centered and located beneath the identification sign on doors of restrooms having handicapped provisions.

### 3.3.2 Building Directories

Signs shall be secured to the wall by means of concealed screws or bolt hangers.

3.4 SIGN DAMAGE

In event of damage to any sign or sign component, the Contractor shall repair or replace the signs or components as required by the Contracting Officer, at no additional cost to the Government.

3.5 CLEANUP

All installed signs and adjacent surfaces shall be free of tape, adhesive, packing paper, dirt, smudges, scratches, discoloration, or other foreign material or defect. The Contractor shall clean all signs in accordance with the manufacturer's instructions.

-- End of Section --